

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-11 (cancelled).

12 (currently amended). A process for the copolymerisation of ethylene and an α -olefin having 7 to 10 carbon atoms, comprising the steps of:

providing a fluidised bed gas phase reactor having a reaction zone and a recycle stream;

providing a single site polymerisation catalyst in said gas phase reactor, said catalyst being a metallocene complex represented by the general formula L_xMQ_n wherein L is a cyclopentadienyl ligand, M is titanium, zirconium or hafnium, Q is a leaving group and x and n are dependent on the oxidation state of the metal;

bringing said ethylene and said α -olefin having 7 to 10 carbon atoms into contact with said single site polymerization catalyst in said reaction zone at a controlled reaction temperature under condensed mode conditions to form a monomer mixture, said condensed mode conditions in the reaction zone being provided by the introduction of said recycle steam comprising a liquid and a gas phase;

maintaining the partial pressure of said α -olefin in the reaction zone below an amount which would, at a temperature of 10°C less than said controlled reaction temperature of said monomer mixture in the reaction zone, be the saturated vapor

pressure of said alpha α -olefin to thereby prevent condensation of said alpha α -olefin in the reaction zone.

13 (previously presented). A process according to claim 12 wherein the partial pressure of ethylene in the reactor is in the range 0.5 to 2 Mpa.

14 (previously presented). A process according to claim 12 wherein the α -olefin is 1-octene.

15 (previously presented). A process according to claim 14 wherein the ratio of 1-octene/ethylene partial pressure is in the range 0.0001 to 0.02.

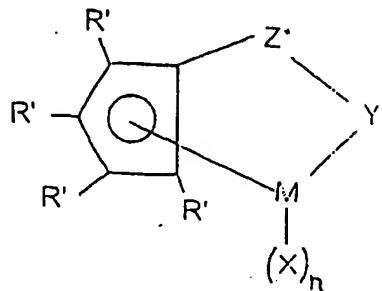
16 (previously presented). A process according to claim 12 wherein the α -olefin is 1-decene.

17 (previously presented). A process according to claim 16 wherein the ratio of 1-decene/ethylene partial pressure is in the range 0.00005 to 0.005.

18 (previously presented). A process according to claim 12 wherein the process is continuous.

19 (canceled).

20 (currently amended). A process according to claim 12 wherein the metallocene complex has the general formula



wherein:-

R' each occurrence is independently selected from the group consisting of hydrogen, hydrocarbyl, silyl, germyl, halo, cyano, and combinations thereof, said R' having up to 20 non-hydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is hydride or a moiety selected from the group consisting of halo, alkyl, aryl, aryloxy, alkoxy, alkoxyalkyl, amidoalkyl and siloxyalkyl having up to 20 non-hydrogen atoms and neutral Lewis base ligands having up to 20 non-hydrogen atoms,

Y is -O-, -S-, -NR*-, -PR*-,

M is hafnium, titanium or zirconium,

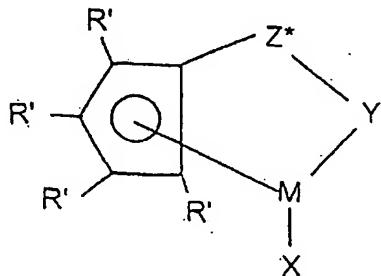
Z* is SiR*₂, CR*₂, SiR*₂SIR*₂ SiR*₂SiR*₂, CR*₂CR*₂, CR*=CR*, CR*₂SIR*₂ CR*₂SiR*₂, or GeR*₂, wherein:

R* each occurrence is independently hydrogen, or a member selected from the group consisting of hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, and combinations thereof, said

R* having up to 10 non-hydrogen atoms, and optionally, two R* groups from Z* (when R* is not hydrogen), or an R* group from Z* and an R* group from Y form a ring system,

and n is 1 or 2 depending on the valence of M.

21 (currently amended). A process according to claim 12 wherein the metallocene complex has the general formula



wherein:-

R' each occurrence is independently selected from the group consisting of hydrogen, hydrocarbyl, silyl, germyl, halo, cyano, and combinations thereof, said R' having up to 20 non-hydrogen atoms, and optionally, two R' groups (where R' is not hydrogen, halo or cyano) together form a divalent derivative thereof connected to adjacent positions of the cyclopentadienyl ring to form a fused ring structure;

X is a neutral η^4 bonded diene group having up to 30 non-hydrogen atoms, which forms a π -complex with M;

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Y is -O-, -S-, -NR*-, -PR*-,

M is titanium or zirconium in the + 2 formal oxidation state;

Z* is SiR*₂, CR*₂, SiR*₂SIR*₂, SiR*₂SiR*₂, CR*₂CR*₂, CR*=CR*, CR*₂SIR*₂

CR*₂SiR*₂, or GeR*₂, wherein:

R* each occurrence is independently hydrogen, or a member selected from the group consisting of hydrocarbyl, silyl, halogenated alkyl, halogenated aryl, and combinations thereof, said

R* having up to 10 non-hydrogen atoms, and optionally, two R* groups from Z* (when R* is not hydrogen), or an R* group from Z* and an R* group from Y form a ring system.

22 (previously presented). A process according to claim 20 wherein the metal M is titanium.